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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
COUGHLAN, PETER D	
ART UNIT	PAPER NUMBER
2129	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/779,717	TORII ET AL.	
	Examiner	Art Unit	
	Peter Coughlan	2129	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 December 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 11-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 11-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Detailed Action

1. This office action is in response to an AMENDMENT entered December 27, 2006 for the patent application 10/779717 filed on February 18, 2004.

2. All previous office actions are fully incorporated into this Non-Final Office Action by reference.

3. One recommendation for possible allowance is the following. It appears to the Examiner that Fig. 1 best summarizes the invention. The components of the invention are recurrent neural networks arranged in a manner that is given in the specification. The inputs of the invention are steering angle, steering angular velocity, steering angular acceleration, steering reaction force, vehicle speed and vehicle acceleration. The outputs of the invention are yaw rate, lateral force, roll and pitch. Write claims which parallel Fig. 1 regarding inputs, outputs and recurrent neural networks arrangement.

Status of Claims

4. Claims 1-4, 11-16 are pending.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 11, 12, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Puskorius et al in view of Giuffre. (U. S. Patent 6092018, referred to as **Puskorius**; U. S. Patent 6042548, referred to as **Giuffre**)

Claims 1, 11

Puskorius teaches a first recurrent neural network formed by connecting plural nodes such that an output of a node is input to another node in accordance with a predetermined coupling weight coefficient, comprising a feedback loop of an output of at least one node, and outputting a vehicle parameter indicating said motion state of the vehicle based on predetermined input information, thereby functioning as said vehicle motion model (**Puskorius,** Fig. 3, C2:31-34, abstract; 'First recurrent neural network' of applicant is equivalent to nodes 111-115 in Fig. 3 of Puskorius. 'Feedback loop' of applicant is illustrated by the 5 connections leading into nodes 131-135 of Puskorius. 'Vehicle parameter indicating a motion state' of applicant is equivalent to 'engine control'

of Puskorius.); plural second recurrent neural networks, each of said second recurrent neural networks formed by connecting second plural nodes such that a second output of a second node is input to another second node in accordance with a second predetermined coupling weight coefficient, comprising a second feedback loop of a second output of at least one second node, and outputting a second vehicle parameter different from said vehicle parameter output from said first recurrent neural network and indicating said motion state of the vehicle based on said predetermined input information, thereby functioning as said vehicle motion model. (**Puskorius,** Fig. 3, C2:31-34, abstract; 'Second recurrent neural network' of applicant is illustrated by nodes 116 and 117 of Puskorius. 'Second feedback loop' of applicant is illustrated by the connections from nodes 116 and 117 back into the input locations which are supplied from the first neural network. 'Vehicle parameter indicating a motion state' of applicant is equivalent to 'engine control' of Puskorius.)

Pskorius does not teach an optimizing unit for determined an optimum solution of said predetermined coupling weight coefficient of said first recurrent neural network and said second predetermined coupling weight coefficient of said plural second recurrent neural.

Giuffre teaches networks based on learning rule using a hereditary algorithm. an optimizing unit for determined an optimum solution of said predetermined coupling weight coefficient of said first recurrent neural network and said second predetermined coupling weight coefficient of said plural second recurrent neural networks based on learning rule using a hereditary algorithm. (**Giuffre,** C4:39-60) It would have been

obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Puskorius by using genetic algorithms as taught by Giuffre to have an optimizing unit for determined an optimum solution of said predetermined coupling weight coefficient of said first recurrent neural network and said second predetermined coupling weight coefficient of said plural second recurrent neural.

For the purpose of using industrial standard optimizing method to produce reliable results.

Puskorius teaches wherein said first recurrent neural network and said plural second recurrent neural networks are mutually connected to each other such that a state variable including a correlation with said vehicle parameter output from said first recurrent neural network is input to each of said plural second recurrent neural networks. (**Puskorius,** Fig. 3, Nodes 111-115 are connected to nodes 116 and 117. Applicant should note that a characteristic of 'recurrent neural networks' is that they allow the output of the recurrent neural network to be connected anywhere, including feedback to earlier recurrent neural networks or itself. This means that recurrent neural networks can be stacked any way desired.)

Claim 12

Puskorius teaches a first recurrent neural network formed by connecting plural nodes such that an output of a node is input to another node in accordance with a predetermined coupling weight coefficient, comprising a feedback loop of an output of at least one node, and outputting a vehicle parameter indicating said motion state of the

vehicle based on predetermined input information, thereby functioning as said vehicle motion model (**Puskorius,** Fig. 3, C2:31-34, abstract; 'First recurrent neural network' of applicant is equivalent to nodes 111-115 in Fig. 3 of Puskorius. 'Feedback loop' of applicant is illustrated by the 5 connections leading into nodes 131-135 of Puskorius. 'Vehicle parameter indicating a motion state' of applicant is equivalent to 'engine control' of Puskorius.); (same as 1,11) plural second recurrent neural networks, each of said second recurrent neural networks are formed by connecting second plural nodes to another second node in accordance with a second predetermined coupling weight coefficient (**Puskorius,** Fig. 3; The output of nodes 116 and 117 are fed back into the input of the second recurrent neural network(s), thus illustrating that all second recurrent neural networks are connected to all other second recurrent neural networks.), comprising a second feedback loop of a second output of at least one second node, and outputting a second vehicle parameter different from said vehicle parameter output from said first recurrent neural network and indicating said motion state of the vehicle based on said predetermined input information, thereby functioning as said vehicle motion model. (**Puskorius,** Fig. 3,The second recurrent neural network of Puskorius consists of nodes 116 and 117. Both of these node have feedback loops. The outputs of these two nodes are 'bypass air' and 'spark advance' which are related to a 'vehicle motion model.)

Puskorius does not teach an optimizing unit for determined an optimum solution of said predetermined coupling weight coefficient of said first recurrent neural network

and said second predetermined coupling weight coefficient of said plural second recurrent neural networks based on learning rule using a hereditary algorithm.

Giuffre teaches an optimizing unit for determined an optimum solution of said predetermined coupling weight coefficient of said first recurrent neural network and said second predetermined coupling weight coefficient of said plural second recurrent neural networks based on learning rule using a hereditary algorithm. (**Giuffre,** C4:39-60) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Puskorius by using genetic algorithms as taught by Giuffre to an optimizing unit for determined an optimum solution of said predetermined coupling weight coefficient of said first recurrent neural network and said second predetermined coupling weight coefficient of said plural second recurrent neural networks based on learning rule using a hereditary algorithm.

For the purpose of using industrial standard optimizing method to produce reliable results.

Puskorius teaches wherein said first recurrent neural network and said plural second recurrent neural networks are mutually connected to each other such that a state variable including a correlation with said vehicle parameter output from said first recurrent neural network is input to each of said plural second recurrent neural networks. (**Puskorius,** Fig. 3, Nodes 111-115 are connected to nodes 116 and 117. Applicant should note that a characteristic of 'recurrent neural networks' is that they allow the output of the recurrent neural network to be connected anywhere, including

feedback to earlier recurrent neural networks or itself. This means that recurrent neural networks can be stacked any way desired.)

Claim 13

Puskorius does not teach determining an optimum solution of a genetic type based on a learning rule using a hereditary algorithm.

Giuffre teaches determining an optimum solution of a genetic type based on a learning rule using a hereditary algorithm. (**Giuffre,** C4:39-60) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Puskorius by using genetic algorithms as taught by Giuffre to determining an optimum solution of a genetic type based on a learning rule using a hereditary algorithm.

For the purpose of using industrial standard optimizing method to produce reliable results.

Puskorius teaches while setting said predetermined coupling weight coefficient of said first recurrent neural network and said second predetermined coupling weight coefficient of said plurality of second recurrent neural networks as said genetic type. (**Puskorius,** Fig. 3; Puskorius illustrates the feedback connection which is used for updating weight values for each respective recurrent neural network.)

Puskorius does not teach outputting an optimum solution of said predetermined coupling weight coefficient.

Giuffre teaches outputting an optimum solution of said predetermined coupling weight coefficient. (**Giuffre,** C4:39-60; Griuffre uses a genetic algorithm to find the optimum solution.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Puskorius by using the genetic algorithm to find an optimum solution as taught by Giuffre to output an optimum solution of said predetermined coupling weight coefficient.

For the purpose of being able to use the results of the genetic algorithm.

Puskorius teaches to said first recurrent neural network based on said optimum solution of said genetic type. (**Puskorius,** Fig. 3; Puskorius illustrates the first recurrent neural network as nodes 111-115.)

Puskorius does not teach outputting a second optimum solution of said second predetermined coupling weight coefficient.

Giuffre teaches outputting a second optimum solution of said second predetermined coupling weight coefficient. (**Giuffre,** C4:39-60; Griuffre uses a genetic algorithm to find the optimum solution.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the teachings of Puskorius by using the genetic algorithm to find an optimum solution as taught by Giuffre to a second optimum solution of said second predetermined coupling weight coefficient.

For the purpose of being able to use the results of the genetic algorithm for a second recurrent neural network.

Puskorius teaches to said plurality of second recurrent neural networks based on said optimum solution of said genetic type (**Puskorius,** Fig. 3; Puskorius illustrates the second recurrent neural network as nodes 116 and 117.); outputting a first vehicle parameter from said first recurrent neural network indicating said motion state of the vehicle based on predetermined input information, and outputting at least one second vehicle parameter from said plurality of second recurrent neural networks indicating said motion state of the vehicle based on said predetermined input information thereby functioning as said vehicle motion model(**Puskorius,** Fig. 3, abstract; 'motion state of the vehicle' of applicant is equivalent to 'engine control' of Puskorius. 'Outputting ... from the first recurrent neural network' of applicant is equivalent to any output from nodes 111 through 115. 'Outputting ... from the second recurrent neural network is outputs 101 and 103.); and outputting a state variable from said first recurrent neural network to each of said plural second recurrent neural networks, said state variable including a correlation with said first vehicle parameter. (**Puskorius,** Fig. 3, Puskorius illustrates that all nodes from the first recurrent neural network (111-115) are connected to the second recurrent neural network. (116, 117))

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2, 4, 14, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Puskorius and Giuffre in view of Margolis (U. S. Patent 6508102, referred to as **Margolis**)

Claims 2, 14

Puskorius and Giuffre do not teach wherein said state value represents one of a road surface state and a motion state of the vehicle.

Margolis teaches wherein said state value represents one of a road surface state(**Margolis,** C1:45-62; 'Road surface state' of applicant is equivalent to 'road surface conditions' of Margolis.) and a motion state of the vehicle. (**Margolis,** C5:8-19; 'Motion state' of applicant is equivalent to 'forward velocity sensor' of Margolis.) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the combined teachings of Puskorius and Giuffre by taking into account the road surface and vehicle velocity as taught by Margolis to have wherein said state value represents one of a road surface state and a motion state of the vehicle.

For the purpose of taking into account factors outside the vehicle which influence yaw, pitch, roll and lateral forces.

Claims 4, 16

Puskorius and Giuffre do not teach Wherein said first recurrent neural network outputs an estimation value of a yaw rate as said vehicle parameter.

Margolis teaches wherein said first recurrent neural network outputs an estimation value of a yaw rate as said vehicle parameter. (**Margolis,** C5:21-23) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the combined teachings of Puskorius and Giuffre by having an output of Yaw as taught by Margolis to first recurrent neural network outputs an estimation value of a yaw rate as said vehicle parameter.

For the purpose of using yaw to aid in determining the roll, pitch and lateral force values.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Puskorius and Giuffre in view of the combination of Battiti and Gangsaas. ('Training Neural Nets with the Reactive Tabu Search', referred to as **Battiti** ; 'Application of Modern Synthesis to Aircraft Control: Three Case Studies', referred to as **Gangsass**)

Claims 3, 15

Puskorius and Giuffre do not teach wherein said predetermined input information comprises at least one of a steering angle, a steering angular velocity, a steering angular acceleration, a steering reaction force, a vehicle speed, and a vehicle acceleration, and wherein said vehicle parameter comprises at least three of an estimation value of a yaw rate, an estimation value of a lateral acceleration, an estimation value of roll, and an estimation value pitch.

Battiti and Gangsass teach wherein said predetermined input information comprises at least one of a steering angle, a steering angular velocity, a steering angular acceleration, a steering reaction force, a vehicle speed, and a vehicle acceleration (**Battiti,** p1196, C1:15-17; Battiti discloses 'steering angle as a variable.), and wherein said vehicle parameter comprises at least three of an estimation value of a yaw rate, an estimation value of a lateral acceleration, an estimation value of roll, and an estimation value pitch.(**Gangsaas,** p1011, C2:35-46, p1012, C1:13-14) It would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the combined teachings of Puskorius and Giuffre by incorporating

steering factors to generate steering results as taught by Battiti and Gangsass tohave wherein said predetermined input information comprises at least one of a steering angle, a steering angular velocity, a steering angular acceleration, a steering reaction force, a vehicle speed, and a vehicle acceleration, and wherein said vehicle parameter comprises at least three of an estimation value of a yaw rate, an estimation value of a lateral acceleration, an estimation value of roll, and an estimation value pitch.

For the purpose of using the invention to predict results of steering based on relevant input to generate a drive by wire system.

Response to Arguments

6. Applicant's arguments filed on December 27, 2006 for claims 1-4, 11-16 have been fully considered but are not persuasive.

7. In reference to the Applicant's argument:

Applicant states that Kamihira does not teach Determining an optimum solution of a genetic type based on a learning rule using a hereditary algorithm while setting said predetermined coupling weight coefficient of said first recurrent neural network and said second predetermined coupling weight coefficient of said plurality of second recurrent neural networks as said genetic type outputting an optimum solution of said predetermined coupling weight coefficient to said first recurrent neural network based on said optimum solution of said genetic type; outputting a second optimum solution of said second predetermined coupling weight coefficient to said plurality of second recurrent neural networks based on said optimum solution of said genetic type;outputting a first vehicle parameter from said first recurrent neural network indicating said motion state of the vehicle based on predetermined input information, and outputting at least one second vehicle parameter from said plurality of second recurrent neural networks indicating said motion state of the vehicle based on said predetermined input information thereby functioning as said vehicle motion model; and

outputting a state variable from said first recurrent neural network to each of said plural second recurrent neural networks, said state variable including a correlation with said first vehicle parameter.

Applicant states that Kamihira fails to teach parallel feedback among the plurality of second recurrent neural networks.

Applicant states that Kamihira fails to disclose outputting a optimum solution for the second recurrent neural network(s).

Applicant states that Kamihira fails to teach 'controlling a vehicle engine' is not equivalent to 'controlling a vehicle engine.'

Examiner's response:

Kamihira is not used in this office action and the combination of Puskius and Giuffre teachs claim 13. Puskorius illustrates the feedback connection which is used for updating weight values for each respective recurrent neural network. (**Puskorius,** Fig. 3) Griuffre uses a genetic algorithm to find the optimum solution. (**Giuffre,** C4:39-60) Puskorius illustrates the first recurrent neural network as nodes 111-115. (**Puskorius,** Fig. 3) Puskorius illustrates the second recurrent neural network as nodes 116 and 117. (**Puskorius,** Fig. 3) 'Motion state of the vehicle' of applicant is equivalent to 'engine control' of Puskorius. 'Outputting ... from the first recurrent neural network' of applicant is equivalent to any output from nodes 111 through 115. 'Outputting ... from the second recurrent neural network is outputs 101 and 103. (**Puskorius,** Fig. 3, abstract) Puskorius illustrates that all nodes from the first recurrent neural network (111-115) are connected to the second recurrent neural network. (116, 117) (**Puskorius,** Fig. 3)

Puskoris teaches the plurality of second recurrent neural networks do provide a feedback in parallel in Fig. 3. The outputs of second recurrent neural networks are feed back into the input location between the first and second recurrent neural networks.

Giuffre discloses using a genetic algorithm for finding the optimum solution. This in combination with Puskorius plurality of recurrent neural networks satisfies applicant's arguments.

Examiner disagrees with applicant argument stating that control of a vehicle engine does not equate to a vehicle motion model. The output of an engine has a direct effect on the vehicle model.

8. In reference to the Applicant's argument:

Applicant states that Kamihira in view of Mehrotra does not teach a first recurrent neural network formed by connecting plural nodes such that an output of a node is input to another node in accordance with a predetermined coupling weight coefficient, comprising a feedback loop of an output of at least one node, and outputting a vehicle parameter indicating said motion state of the vehicle based on predetermined input information, thereby functioning as said vehicle motion model plural second recurrent neural networks, each of said second recurrent neural networks are formed by connecting second plural nodes to another second node in accordance with a second predetermined coupling weight coefficient, comprising a second feedback loop of a second output of at least one second node, and outputting a second vehicle parameter different from said vehicle parameter output from said first recurrent neural network and indicating said motion state of the vehicle based on said predetermined input information, thereby functioning as said vehicle motion model an optimizing unit for determined an optimum solution of said predetermined coupling weight coefficient of said first recurrent neural network and said second predetermined coupling weight coefficient of said plural second recurrent neural networks based on learning rule using a hereditary algorithm, wherein said first recurrent neural network and said plural second recurrent neural networks are mutually connected to each other such that a state variable including a correlation with said vehicle parameter output from said first recurrent neural network is input to each of said plural second recurrent neural networks.

Applicant states that Kamihira fails to teach parallel feedback among the plurality of second recurrent neural networks.

Applicant states that Kamihira fails to disclose outputting a optimum solution for the second recurrent neural network(s).

Applicant states that Mehrotra fails to teach a first recurrent neural network and a plurality of second recurrent neural networks.

Examiner's response:

'First recurrent neural network' of applicant is equivalent to nodes 111-115 in Fig. 3 of Puskorius. 'Feedback loop' of applicant is illustrated by the 5 connections leading into nodes 131-135 of Puskorius. 'Vehicle parameter indicating a motion state' of applicant is equivalent to 'engine control' of Puskorius. (**Puskorius,** Fig. 3, C2:31-34, abstract) The output of nodes 116 and 117 are fed back into the input of the second recurrent neural network(s), thus illustrating that all second recurrent neural networks are connected to all other second recurrent neural networks. (**Puskorius,** Fig. 3) The second recurrent neural network of Puskorius consists of nodes 116 and 117. Both of these node have feedback loops. The outputs of these two nodes are 'bypass air' and 'spark advance' which are related to a 'vehicle motion model. (**Puskorius,** Fig. 3) Nodes 111-115 are connected to nodes 116 and 117. Applicant should note that a characteristic of 'recurrent neural networks' is that they allow the output of the recurrent neural network to be connected anywhere, including feedback to earlier recurrent neural networks or itself. This means that recurrent neural networks can be stacked any way desired. (**Puskorius,** Fig. 3)

Puskoris teaches the plurality of second recurrent neural networks do provide a feedback in parallel in Fig. 3. The outputs of second recurrent neural networks are feed back into the input location between the first and second recurrent neural networks.

Giuffre discloses using a genetic algorithm for finding the optimum solution. This in combination with Puskorius plurality of recurrent neural networks satisfies applicant's arguments.

Puskorius teaches a first recurrent neural network and a plurality of second recurrent neural networks. (Fig. 3)

Examination Considerations

9. The claims and only the claims form the metes and bounds of the invention. "Office personnel are to give the claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. *In re Prater*, 415 F.2d, 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969)" (MPEP p 2100-8, c 2, l 45-48; p 2100-9, c 1, l 1-4). The Examiner has the full latitude to interpret each claim in the broadest reasonable sense. Examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.

10. Examiner's Notes are provided to assist the applicant to better understand the nature of the prior art, application of such prior art and, as appropriate, to further indicate other prior art that maybe applied in other office actions. Such comments are entirely consistent with the intent and sprit of compact prosecution. However, and

unless otherwise stated, the Examiner's Notes are not prior art but link to prior art that one of ordinary skill in the art would find inherently appropriate.

11. Examiner's Opinion: Paragraphs 9 and 10 apply. The Examiner has full latitude to interpret each claim in the broadest reasonable sense.

Conclusion

12. The prior art of record and not relied upon is considered pertinent to the applicant's disclosure.

-U. S. Patent Publication 20020079155: Andonian

-U. S. Patent 6292791: Su

-U. S. Patent 6285163: Watanabe

-U. S. Patent 5909676: Kano

-U. S. Patent 5690103: Groth

-U. S. Patent 5136686: Koza

-'Elements of Artificial Neural networks': Mehrotra

-U. S. Patent 5774823: James

-'Development of neural network control of steer-by-wire system for intelligent vehicles': Nwagboso

-''Where is computer driving cars': Walker

-'American Control Conference, 2002, Proceedings of the 2002'

-'Engineering design for the next millennium: the challenge of artificial intellgence'

-'Advance steering system adaptable to lateral control task and driver's intent': Yuhara

-U. S. Patent 6370460: Kaufman

-U. S. Patent 6176341: Ansari

-U. S. Patent 5247441: Serizawa

13. Claims 1-4, 11-16 are rejected.

Correspondence Information

14. Any inquiry concerning this information or related to the subject disclosure should be directed to the Examiner Peter Coughlan, whose telephone number is (571) 272-5990. The Examiner can be reached on Monday through Friday from 7:15 a.m. to 3:45 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor David Vincent can be reached at (571) 272-3080. Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,

Washington, D. C. 20231;

Hand delivered to:

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Randolph Building,

401 Dulany Street,

Alexandria, Virginia 22313,

(located on the first floor of the south side of the Randolph Building);

or faxed to:

(571) 272-3150 (for formal communications intended for entry.)

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have any questions on access to Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

Peter Coughlan

2/23/2007

JOSEPH P HIRL
PRIMARY EXAMINER
TECHNOLOGY CENTER 2100